EVERY MINUTE OF EVERY DAY, CANADIAN LANDFILL SITES COLLECTIVELY RELEASE TONNES OF GREENHOUSE GASES SUCH AS CARBON DIOXIDE AND METHANE, AND MANY OTHER CONTAMINANTS. CARBON DIOXIDE AND METHANE TRAP THE HEAT REFLECTED FROM THE EARTH, THEREBY CONTRIBUTING TO GLOBAL WARMING AND THREATENING TO CHANGE THE CLIMATE OF OUR PLANET.

DID YOU KNOW?
If greenhouse gases continue to increase at the present rate, the global temperature could increase between 1.5°C and 4.5°C in the next 100 years. This could result in rising sea levels, increased intensity of storms, droughts and heatwaves.

ALLOWING LANDFILL GAS TO ESCAPE NOT ONLY CONTRIBUTES TO GLOBAL WARMING, BUT ALSO WASTES A POTENTIAL ENERGY SOURCE. AT MANY SITES, LANDFILL GAS CAN BE COLLECTED AND BURNED TO GENERATE ELECTRICITY, FUEL INDUSTRIES AND HEAT BUILDINGS. AFTER ALL, METHANE IS THE MAIN COMPONENT OF BOTH LANDFILL GAS AND NATURAL GAS – ONE OF CANADA'S MAJOR ENERGY SOURCES. HARNESSING THE POWER OF LANDFILL GAS MAKES GOOD ENVIRONMENTAL AND ECONOMIC SENSE–BOTH REGIONALLY AND GLOBALLY.

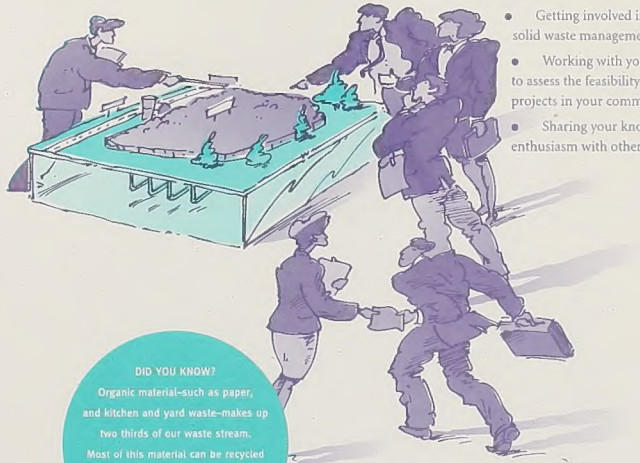
LANDFILL GAS: IF WE DON'T USE IT, WE LOSE IT.

HOW

you can help

There are many things you can do to help reduce the impact of our landfill sites on the environment. Practicing the 3Rs – reduce, reuse and recycle – to minimize waste is a good first step. Spreading the word about the benefits of landfill gas recovery and utilization increases public awareness and support for such projects in your community. You can help make a difference by:

- Learning more about your local landfill, and asking questions about the way it is run;
- Getting involved in community solid waste management planning;
- Working with your municipality to assess the feasibility of landfill gas projects in your community; and
- Sharing your knowledge and enthusiasm with others.



DID YOU KNOW?
Organic material–such as paper, and kitchen and yard waste–makes up two thirds of our waste stream. Most of this material can be recycled or composted thus reducing Canada's greenhouse gas emissions.

For more waste management and climate change information, please contact:
The Environment Canada Enquiry Centre at 1-800-668-6767
or write to:
Environment Canada Enquiry Centre,
Ottawa, Ontario K1A 0H3

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WASTE MANAGEMENT INFORMATION SERIES

LANDFILL GAS

Use it OR lose it

Environment Canada Environnement Canada

HAVE YOU EVER

wondered

WHAT HAPPENS TO THE GARBAGE YOU CARRY OUT TO THE CURB EACH WEEK?

While it may seem to disappear, the fact is that most of the waste we produce ends up at a landfill site.

These sites are society's wasteland of paper, plastics, organics and metals. But the problem goes even deeper. Changes that take place below ground cause other changes high above the surface of the Earth. These changes could have a detrimental effect on our lives and the environment around us.

FACT
In Canada, we recover over 250,000 tonnes of methane gas each year. This achieves the same reduction in greenhouse gas emissions as taking 1.5 million vehicles off Canadian roads. A lot more can be achieved!

When organic material such as paper, food, yard and garden waste rots, it produces landfill gas. One of the main components of this gas is carbon dioxide, or CO_2. CO_2 is the most common natural and man-made greenhouse gas, and the major contributor to global warming, originating primarily from the burning of fossil fuels.

The other principal component of landfill gas is methane – a colourless, odourless and highly explosive gas. Methane is 25 times more potent than CO_2 as a greenhouse gas. One of the major sources of methane released by human activities in Canada originates from municipal solid waste landfills.

Reducing the amount of organic waste we send to landfill sites and finding constructive ways to use landfill gas are vital to meeting Canada's commitment to stabilize greenhouse gas emissions at 1990 levels by the year 2000.

Responsible waste management requires a long-term commitment. Landfills generate up to 125 cubic metres of methane gas per tonne of waste over a period of 10 to 40 years. If not properly managed, landfill gas can create a number of environmental, health and odour problems.

The "rotten egg" smell of hydrogen sulphide can escape from cracks in the surface of the landfill, and cause nuisance in the nearby community. Landfill gas can move through the ground, affect vegetation, and collect in enclosed structures and cause asphyxiation, explosions, or fires. Some of the more toxic chemicals found in landfill gas – including benzene and vinyl chloride – have been linked to cancer and other illnesses.

What's in landfill gas?

- Carbon dioxide
- Methane
- Water vapour
- Other chemical compounds

Using a collection system to capture landfill gas is one way of solving some of these problems. Landfill gas can be controlled in a variety of ways. Venting – or releasing the collected gas into the atmosphere – reduces the risk of fires, explosions and asphyxiation, but does not lessen the environmental effects. The burning or flaring of landfill gas reduces the global warming effect of methane and destroys other contaminants. The best alternative is to produce energy from landfill gas.

IT MAKES

good sense!

Methane produced by the decomposition of our garbage is an available, reliable and relatively untapped source of energy at many landfill sites in Canada. Using methane gas to generate electricity, fuel industries, or create heat reduces its impact on global warming. It displaces the use of fossil fuels for energy production. And it can make money.

Over 20 landfills in Canada have methane recovery and utilization systems in place – from the large Brock West site near Toronto, which sells electricity to Ontario Hydro, to the small Tretheway landfill in British Columbia, which heats a nearby agricultural complex.

Approximately 80 per cent of recovered landfill gas is used for the purpose of generating electricity – an option available to sites located near power grids. In Canada, landfill gas will generate about 100 megawatts of electricity by 1996; enough to supply nearly 50,000 households. Landfill gas can also be upgraded to pipeline quality natural gas and even power fuel cells.

DID YOU KNOW?
Most medium to large landfill sites in Canada are located within two kilometres of at least one potential landfill gas user.

So, why aren't all landfills recovering and utilizing landfill gas? For remote landfills, lack of access to markets is a major problem. Small sites may not produce enough gas to attract customers. Others have technical limitations, problems getting financing or obtaining the necessary approvals. Market forces also play an important role: when there is an energy surplus, low energy prices make it difficult for new technologies to compete.

Overcoming these barriers requires increased awareness of the environmental and economic benefits of landfill gas recovery and utilization projects. It also requires advance planning. For example, designing landfill sites with recovery projects in mind can improve gas yield and consequently, economic efficiency. Encouraging potential industrial, commercial and institutional facilities to locate near landfill sites creates ready-made users.

The Benefits of Landfill Gas Recovery – A Win-Win Situation

- controls the release of greenhouse gases that contribute to global warming
- reduces odours, damage to vegetation and the risks from explosions, fires and asphyxiation
- converts a harmful emission into a reliable energy source
- creates a potential source of revenue/profit